

## ABSTRACT

A method of reconstructing a road is provided. This method includes taking representative cores of the road, analyzing the cores, selecting a substantially solvent-free emulsion based on climate history, mixing the emulsion and reclaimed asphalt pavement particles to form an asphalt emulsion mix, testing the asphalt emulsion mix for performance using a raveling test, a thermal cracking prediction test by an indirect tensile testing, a moisture susceptibility test utilizing vacuum saturation, and a dry Marshall stability test. It also includes designing a CIR layer based on this test data. It further includes grinding off a layer of the existing asphalt road leaving at least about an inch, adding an emulsion to the reclaimed asphalt pavement particles, applying the designed cold in-place recycling layer to the road, and compacting it.